

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis

13715 Rider Trail North

Earth City, MO 63045

Tel: (314)298-8566

TestAmerica Job ID: 160-13266-2

Client Project/Site: EPA RST2 - RFP No. 334

For:

Weston Solutions, Inc.

1090 King Georges Post Road, Suite 201

Edison, New Jersey 08837

Attn: Ms. Smita Sumbaly

Rhonda Ridenhower

Authorized for release by:

9/3/2015 12:05:29 PM

Rhonda Ridenhower, Manager of Project Management
(314)298-8566

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Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: Weston Solutions, Inc.
Project/Site: EPA RST2 - RFP No. 334

TestAmerica Job ID: 160-13266-2

Job ID: 160-13266-2

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: Weston Solutions, Inc.

Project: EPA RST2 - RFP No. 334

Report Number: 160-13266-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 08/08/2015; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.2° C and 3.0° C.

RADIUM 226 (21 DAY INGROWTH)

Sample RB-080515 (160-13266-7) was analyzed for Radium 226 (21 day ingrowth) in accordance with SW- 846 Method 9315. The samples were prepared on 08/11/2015 and analyzed on 09/02/2015.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-228 (GFPC)

Sample RB-080515 (160-13266-7) was analyzed for Radium-228 (GFPC) in accordance with SW-846 Method 9320. The samples were prepared on 08/11/2015 and analyzed on 08/26/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Case Narrative

Client: Weston Solutions, Inc.
Project/Site: EPA RST2 - RFP No. 334

TestAmerica Job ID: 160-13266-2

Job ID: 160-13266-2 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples C002-SS001-2448-01 (160-13266-1), C002-SS002-2448-01 (160-13266-2), C002-SS003-2448-01 (160-13266-3), C003-SS001-2448-01 (160-13266-4), C003-SS001-2448-02 (160-13266-5), C003-SS002-0024-01 (160-13266-6), C003-SS003-2448-01 (160-13266-8), C002-TRENCH-0036-01 (160-13266-9) and C004-SS001-1824-01 (160-13266-10) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were dried on 08/10/2015, prepared on 08/12/2015 and analyzed on 09/02/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

USEPA

Date Shipped: 8/5/2015

Carrier Name: FedEx
Airbill No: 8037-9662-5810

CHAIN OF CUSTODY RECORD

Case #: 334

Contact Name: Bernard Nwosu
Contact Phone: 908-565-2980

No: 2-080515-2230111-0001

Lab: TestAmerica Laboratories, Inc. - St. Louis, MO
Lab Contact: Mike Franks
Lab Phone: 314-298-8566

Lab #	Sample #	Sample Date	Sample Time	Matrix	Lab QC	Numb Cont	Container	Preservative	Analyses	Analytical Method
C002-SS001-2448-01		8/5/2015	10:50	Soil		2	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-OR
C002-SS001-2448-01		8/5/2015	10:50	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
C002-SS001-2448-01		8/5/2015	10:50	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
C002-SS001-2448-01		8/5/2015	10:50	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B
C002-SS001-2448-01		8/5/2015	10:50	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
C002-SS002-2448-01		8/5/2015	11:40	Soil		2	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-OR
C002-SS002-2448-01		8/5/2015	11:40	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
C002-SS002-2448-01		8/5/2015	11:40	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
C002-SS002-2448-01		8/5/2015	11:40	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B
C002-SS002-2448-01		8/5/2015	11:40	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
C002-SS003-2448-01		8/5/2015	12:10	Soil		2	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-OR
C002-SS003-2448-01		8/5/2015	12:10	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
C002-SS003-2448-01		8/5/2015	12:10	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
C002-SS003-2448-01		8/5/2015	12:10	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B
C002-SS003-2448-01		8/5/2015	12:10	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
C003-SS001-2448-01		8/5/2015	14:10	Soil	Y	4	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-OR
C003-SS001-2448-01		8/5/2015	14:10	Soil	Y	2	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
C003-SS001-2448-01		8/5/2015	14:10	Soil	Y	2	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R

Special Instructions: Results for Radium-226 and Radium-228 analyzed via gamma spectroscopy should be reported separately for soil samples.

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Item/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples All Analyses	Bernard Nwosu Weston Solutions	8/7/15	J. T. <i>[Signature]</i>	8/8/15 09:00	



160-13266 Chain of Custody

USEPA

Date Shipped: 8/5/2015

Carrier Name: FedEx

Airbill No: 8037-9662-5810

CHAIN OF CUSTODY RECORD

Case #: 334

Contact Name: Bernard Nwosu
Contact Phone: 908-565-2980

No: 2-080515-230111-0001

Lab: TestAmerica Laboratories, Inc. - St. Louis, MO
Lab Contact: Mike Franks
Lab Phone: 314-298-8566

Lab #	Sample #	Sample Date	Sample Time	Matrix	Lab QC	Numb Cont	Container	Preservative	Analyses	Analytical Method
C003-SS001-2448-01	8/5/2015	14:10	Soil	Y		2	2 oz glass jar	4C	Mercury	SW846 7471B
C003-SS001-2448-01	8/5/2015	14:10	Soil	Y		2	2 oz glass jar	4C	TAL Metals	SW846 3050B/6010C
C003-SS001-2448-02	8/5/2015	14:12	Soil			2	16 oz glass jar	4C	Gamma Spectroscopy	HASL-300 GA-01-OR
C003-SS001-2448-02	8/5/2015	14:12	Soil			1	2 oz glass jar	4C	Isotopic Thorium	HASL-300 A-01-R
C003-SS001-2448-02	8/5/2015	14:12	Soil			1	2 oz glass jar	4C	Isotopic Uranium	HASL-300 A-01-R
C003-SS001-2448-02	8/5/2015	14:12	Soil			1	2 oz glass jar	4C	Mercury	SW846 7471B
C003-SS001-2448-02	8/5/2015	14:12	Soil			1	2 oz glass jar	4C	TAL Metals	SW846 3050B/6010C
C003-SS002-0024-01	8/5/2015	14:55	Soil			2	16 oz glass jar	4C	Gamma Spectroscopy	HASL-300 GA-01-OR
C003-SS002-0024-01	8/5/2015	14:55	Soil			1	2 oz glass jar	4C	Isotopic Thorium	HASL-300 A-01-R
C003-SS002-0024-01	8/5/2015	14:55	Soil			1	2 oz glass jar	4C	Isotopic Uranium	HASL-300 A-01-R
C003-SS002-0024-01	8/5/2015	14:55	Soil			1	2 oz glass jar	4C	Mercury	SW846 7471B
C003-SS002-0024-01	8/5/2015	14:55	Soil			1	2 oz glass jar	4C	TAL Metals	SW846 3050B/6010C
RB-080515	8/5/2015	15:00	Aqueous			1	1 L poly bottle	HNC3 pH<2	Gamma Spectroscopy	HASL-300 GA-01-OR
RB-080515	8/5/2015	15:00	Aqueous			1	1 L poly bottle	HNC3 pH<2	Isotopic Thorium	HASL-300 A-01-R
RB-080515	8/5/2015	15:00	Aqueous			1	1 L poly bottle	HNC3 pH<2	Isotopic Uranium	HASL-300 A-01-R
RB-080515	8/5/2015	15:00	Aqueous			1	500 ml poly bottle	HNC3 pH<2	Mercury	SW846 7471B
RB-080515	8/5/2015	15:00	Aqueous			1	1 L poly bottle	HNC3 pH<2	Radium-226	SW846 9315
RB-080515	8/5/2015	15:00	Aqueous			1	1 L poly bottle	HNC3 pH<2	Radium-228	SW846 9320

Special Instructions: Results for Radium-226 and Radium-228 analyzed via gamma spectroscopy should be reported separately for soil samples.

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples All Analyses	Bernard Weston Weston Chem Solutions	8/7/15	J. F. T.	8/8/15 0910	

USEPA

Date Shipped: 8/5/2015

Carrier Name: FedEx

Airbill No: 8037-9662-5810

CHAIN OF CUSTODY RECORD

Case #: 334

Contact Name: Bernard Nwosu
Contact Phone: 908-565-2980

No: 2-080515-230111-0001

Lab: TestAmerica Laboratories, Inc. - St. Louis, MO
Lab Contact: Mike Franks
Lab Phone: 314-298-8566

Lab #	Sample #	Sample Date	Sample Time	Matrix	Lab QC	Numb Cont	Container	Preservative	Analyses	Analytical Method
RB-080515	8/5/2015	15:00	Aqueous		1	500 ml poly bottle	HNO3 pH<2	TAL Metals	SW846 3050B/6010C	
C003-SS003-2448-01	8/5/2015	15:15	Soil		2	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-R	
C003-SS003-2448-01	8/5/2015	15:15	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R	
C003-SS003-2448-01	8/5/2015	15:15	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R	
C003-SS003-2448-01	8/5/2015	15:15	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B	
C003-SS003-2448-01	8/5/2015	15:15	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C	
C002-TRENCH-0036-01	8/5/2015	15:30	Soil		2	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-R	
C002-TRENCH-0036-01	8/5/2015	15:30	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R	
C002-TRENCH-0036-01	8/5/2015	15:30	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R	
C002-TRENCH-0036-01	8/5/2015	15:30	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B	
C002-TRENCH-0036-01	8/5/2015	15:30	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C	
C004-SS001-1824-01	8/7/2015	08:15	Soil		2	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-R	
C004-SS001-1824-01	8/7/2015	08:15	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R	
C004-SS001-1824-01	8/7/2015	08:15	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R	
C004-SS001-1824-01	8/7/2015	08:15	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B	
C004-SS001-1824-01	8/7/2015	08:15	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C	

Special Instructions: Results for Radium-226 and Radium-228 analyzed via gamma spectroscopy should be reported separately for soil samples.

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Item/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples All Analyses	Bernard Nwosu Western Analytical Solutions	8/7/15	bjf	8/8/15 08:00	

Login Sample Receipt Checklist

Client: Weston Solutions, Inc.

Job Number: 160-13266-2

Login Number: 13266

List Source: TestAmerica St. Louis

List Number: 1

Creator: Daniels, Brian J

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Definitions/Glossary

Client: Weston Solutions, Inc.
Project/Site: EPA RST2 - RFP No. 334

TestAmerica Job ID: 160-13266-2

Qualifiers

Rad

Qualifier Qualifier Description

U	Result is less than the sample detection limit.
---	---

Glossary

Abbreviation These commonly used abbreviations may or may not be present in this report.

□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method Summary

Client: Weston Solutions, Inc.
Project/Site: EPA RST2 - RFP No. 334

TestAmerica Job ID: 160-13266-2

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
GA-01-R	Radium-226 & Other Gamma Emitters (GS)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

TestAmerica St. Louis

Sample Summary

Client: Weston Solutions, Inc.

Project/Site: EPA RST2 - RFP No. 334

TestAmerica Job ID: 160-13266-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-13266-1	C002-SS001-2448-01	Solid	08/05/15 10:50	08/08/15 08:10
160-13266-2	C002-SS002-2448-01	Solid	08/05/15 11:40	08/08/15 08:10
160-13266-3	C002-SS003-2448-01	Solid	08/05/15 12:10	08/08/15 08:10
160-13266-4	C003-SS001-2448-01	Solid	08/05/15 14:10	08/08/15 08:10
160-13266-5	C003-SS001-2448-02	Solid	08/05/15 14:12	08/08/15 08:10
160-13266-6	C003-SS002-0024-01	Solid	08/05/15 14:55	08/08/15 08:10
160-13266-7	RB-080515	Water	08/05/15 15:00	08/08/15 08:10
160-13266-8	C003-SS003-2448-01	Solid	08/05/15 15:15	08/08/15 08:10
160-13266-9	C002-TRENCH-0036-01	Solid	08/05/15 15:30	08/08/15 08:10
160-13266-10	C004-SS001-1824-01	Solid	08/07/15 08:15	08/08/15 08:10

TestAmerica St. Louis

Client Sample Results

Client: Weston Solutions, Inc.
Project/Site: EPA RST2 - RFP No. 334

TestAmerica Job ID: 160-13266-2

Client Sample ID: C002-SS001-2448-01

Date Collected: 08/05/15 10:50

Date Received: 08/08/15 08:10

Lab Sample ID: 160-13266-1

Matrix: Solid

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	(2σ+/-)						
Radium-226	1.86		0.304	0.360	1.00	0.199	pCi/g	08/12/15 14:12	09/02/15 06:59	1

Client Sample ID: C002-SS002-2448-01

Date Collected: 08/05/15 11:40

Date Received: 08/08/15 08:10

Lab Sample ID: 160-13266-2

Matrix: Solid

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	(2σ+/-)						
Radium-226	1.45		0.202	0.252	1.00	0.112	pCi/g	08/12/15 14:12	09/02/15 07:00	1

Client Sample ID: C002-SS003-2448-01

Date Collected: 08/05/15 12:10

Date Received: 08/08/15 08:10

Lab Sample ID: 160-13266-3

Matrix: Solid

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	(2σ+/-)						
Radium-226	9.84		0.631	1.20	1.00	0.255	pCi/g	08/12/15 14:12	09/02/15 07:01	1

Client Sample ID: C003-SS001-2448-01

Date Collected: 08/05/15 14:10

Date Received: 08/08/15 08:10

Lab Sample ID: 160-13266-4

Matrix: Solid

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	(2σ+/-)						
Radium-226	10.3		0.511	1.19	1.00	0.228	pCi/g	08/12/15 14:12	09/02/15 06:58	1

Client Sample ID: C003-SS001-2448-02

Date Collected: 08/05/15 14:12

Date Received: 08/08/15 08:10

Lab Sample ID: 160-13266-5

Matrix: Solid

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	(2σ+/-)						
Radium-226	11.3		0.634	1.33	1.00	0.306	pCi/g	08/12/15 14:12	09/02/15 07:31	1

TestAmerica St. Louis

Client Sample Results

Client: Weston Solutions, Inc.
Project/Site: EPA RST2 - RFP No. 334

TestAmerica Job ID: 160-13266-2

Client Sample ID: C003-SS002-0024-01
Date Collected: 08/05/15 14:55
Date Received: 08/08/15 08:10

Lab Sample ID: 160-13266-6
Matrix: Solid

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	129		1.94	13.6	1.00	0.699	pCi/g	08/12/15 14:12	09/02/15 07:32	1

Client Sample ID: RB-080515
Date Collected: 08/05/15 15:00
Date Received: 08/08/15 08:10

Lab Sample ID: 160-13266-7
Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.0623	U	0.0663	0.0665	1.00	0.108	pCi/L	08/11/15 11:00	09/02/15 06:44	1
Carrier										
Ba Carrier	105		40 - 110					Prepared	Analyzed	Dil Fac
								08/11/15 11:00	09/02/15 06:44	1

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.117	U	0.222	0.222	1.00	0.376	pCi/L	08/11/15 11:23	08/26/15 11:19	1
Carrier										
Ba Carrier	105		40 - 110					Prepared	Analyzed	Dil Fac
Y Carrier	88.6		40 - 110					08/11/15 11:23	08/26/15 11:19	1
								08/11/15 11:23	08/26/15 11:19	1

Client Sample ID: C003-SS003-2448-01
Date Collected: 08/05/15 15:15
Date Received: 08/08/15 08:10

Lab Sample ID: 160-13266-8
Matrix: Solid

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	15.1		0.766	1.75	1.00	0.356	pCi/g	08/12/15 14:12	09/02/15 07:37	1

Client Sample ID: C002-TRENCH-0036-01
Date Collected: 08/05/15 15:30
Date Received: 08/08/15 08:10

Lab Sample ID: 160-13266-9
Matrix: Solid

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	10.4		0.546	1.21	1.00	0.219	pCi/g	08/12/15 14:12	09/02/15 07:36	1

TestAmerica St. Louis

Client Sample Results

Client: Weston Solutions, Inc.

Project/Site: EPA RST2 - RFP No. 334

TestAmerica Job ID: 160-13266-2

Client Sample ID: C004-SS001-1824-01

Lab Sample ID: 160-13266-10

Date Collected: 08/07/15 08:15

Matrix: Solid

Date Received: 08/08/15 08:10

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	1.59		0.241	0.292	1.00	0.161	pCi/g	08/12/15 14:12	09/02/15 07:34	1

TestAmerica St. Louis

QC Sample Results

Client: Weston Solutions, Inc.
Project/Site: EPA RST2 - RFP No. 334

TestAmerica Job ID: 160-13266-2

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-204925/1-A

Matrix: Water

Analysis Batch: 209120

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 204925

Analyte	Result	MB Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.005908	U	0.0431	0.0431	1.00	0.0817	pCi/L	08/11/15 10:41	09/02/15 06:37	1
Carrier										
<i>Ba Carrier</i>	98.8	MB Qualifier	Limits		40 - 110	Prepared	Analyzed	Dil Fac	08/11/15 10:41	09/02/15 06:37

Lab Sample ID: LCS 160-204925/2-A

Matrix: Water

Analysis Batch: 209120

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 204925

Analyte	Result	MB Qualifier	Spike	LCS	LCS	Total	RL	MDC	Unit	%Rec.
			Added	Result	Qual	Uncert. (2σ+/-)				
Radium-226	11.2			11.56		1.14	1.00	0.0794	pCi/L	104
Carrier										
<i>Ba Carrier</i>	93.2	MB Qualifier	Limits		40 - 110	Prepared	Analyzed	Dil Fac	08/11/15 10:41	09/02/15 06:37

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-204941/1-A

Matrix: Water

Analysis Batch: 207920

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 204941

Analyte	Result	MB Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.1404	U	0.214	0.214	1.00	0.359	pCi/L	08/11/15 11:23	08/26/15 11:21	1
Carrier										
<i>Ba Carrier</i>	98.8	MB Qualifier	Limits		40 - 110	Prepared	Analyzed	Dil Fac	08/11/15 11:23	08/26/15 11:21
<i>Y Carrier</i>	89.0	MB Qualifier			40 - 110	Prepared	Analyzed	Dil Fac	08/11/15 11:23	08/26/15 11:21

Lab Sample ID: LCS 160-204941/2-A

Matrix: Water

Analysis Batch: 207920

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 204941

Analyte	Result	MB Qualifier	Spike	LCS	LCS	Total	RL	MDC	Unit	%Rec.
			Added	Result	Qual	Uncert. (2σ+/-)				
Radium-228	3.31			2.921		0.471	1.00	0.345	pCi/L	88
Carrier										
<i>Ba Carrier</i>	93.2	MB Qualifier	Limits		40 - 110	Prepared	Analyzed	Dil Fac	08/11/15 11:23	08/26/15 11:21
<i>Y Carrier</i>	89.0	MB Qualifier			40 - 110	Prepared	Analyzed	Dil Fac	08/11/15 11:23	08/26/15 11:21

TestAmerica St. Louis

QC Sample Results

Client: Weston Solutions, Inc.
Project/Site: EPA RST2 - RFP No. 334

TestAmerica Job ID: 160-13266-2

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-205239/1-A

Matrix: Solid

Analysis Batch: 209099

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 205239

Analyte	MB Result	MB Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-0.01030	U	0.134	0.134	1.00	0.188	pCi/g	08/12/15 14:12	09/02/15 07:30	1

Lab Sample ID: LCS 160-205239/2-A

Matrix: Solid

Analysis Batch: 209098

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 205239

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	Limits
				Uncert. (2σ+/-)					
Americium-241	97.2	98.19		10.3		1.14	pCi/g	101	87 - 116
Cesium-137	30.2	30.63		3.26		0.264	pCi/g	101	87 - 120
Cobalt-60	19.0	19.04		1.96		0.0953	pCi/g	100	87 - 115

Lab Sample ID: 160-13266-4 DU

Matrix: Solid

Analysis Batch: 209102

Client Sample ID: C003-SS001-2448-01

Prep Type: Total/NA

Prep Batch: 205239

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total	RL	MDC	Unit	RER	RER Limit
					Uncert. (2σ+/-)					
Radium-226	10.3		10.52		1.28	1.00	0.330	pCi/g	0.08	1

TestAmerica St. Louis

QC Association Summary

Client: Weston Solutions, Inc.

Project/Site: EPA RST2 - RFP No. 334

TestAmerica Job ID: 160-13266-2

Rad

Leach Batch: 204744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-13266-1	C002-SS001-2448-01	Total/NA	Solid	Dry and Grind	
160-13266-2	C002-SS002-2448-01	Total/NA	Solid	Dry and Grind	
160-13266-3	C002-SS003-2448-01	Total/NA	Solid	Dry and Grind	
160-13266-4	C003-SS001-2448-01	Total/NA	Solid	Dry and Grind	
160-13266-4 DU	C003-SS001-2448-01	Total/NA	Solid	Dry and Grind	
160-13266-5	C003-SS001-2448-02	Total/NA	Solid	Dry and Grind	
160-13266-6	C003-SS002-0024-01	Total/NA	Solid	Dry and Grind	
160-13266-8	C003-SS003-2448-01	Total/NA	Solid	Dry and Grind	
160-13266-9	C002-TRENCH-0036-01	Total/NA	Solid	Dry and Grind	
160-13266-10	C004-SS001-1824-01	Total/NA	Solid	Dry and Grind	

Prep Batch: 204925

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-13266-7	RB-080515	Total/NA	Water	PrecSep-21	
LCS 160-204925/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
MB 160-204925/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Prep Batch: 204941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-13266-7	RB-080515	Total/NA	Water	PrecSep_0	
LCS 160-204941/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
MB 160-204941/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Prep Batch: 205239

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-13266-1	C002-SS001-2448-01	Total/NA	Solid	Fill_Geo-21	204744
160-13266-2	C002-SS002-2448-01	Total/NA	Solid	Fill_Geo-21	204744
160-13266-3	C002-SS003-2448-01	Total/NA	Solid	Fill_Geo-21	204744
160-13266-4	C003-SS001-2448-01	Total/NA	Solid	Fill_Geo-21	204744
160-13266-4 DU	C003-SS001-2448-01	Total/NA	Solid	Fill_Geo-21	204744
160-13266-5	C003-SS001-2448-02	Total/NA	Solid	Fill_Geo-21	204744
160-13266-6	C003-SS002-0024-01	Total/NA	Solid	Fill_Geo-21	204744
160-13266-8	C003-SS003-2448-01	Total/NA	Solid	Fill_Geo-21	204744
160-13266-9	C002-TRENCH-0036-01	Total/NA	Solid	Fill_Geo-21	204744
160-13266-10	C004-SS001-1824-01	Total/NA	Solid	Fill_Geo-21	204744
LCS 160-205239/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
MB 160-205239/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	

TestAmerica St. Louis

Tracer/Carrier Summary

Client: Weston Solutions, Inc.
Project/Site: EPA RST2 - RFP No. 334

TestAmerica Job ID: 160-13266-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Ba (40-110)	
160-13266-7	RB-080515	105	
LCS 160-204925/2-A	Lab Control Sample	93.2	
MB 160-204925/1-A	Method Blank	98.8	

Tracer/Carrier Legend
Ba = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Ba (40-110)	Y (40-110)
160-13266-7	RB-080515	105	88.6
LCS 160-204941/2-A	Lab Control Sample	93.2	89.0
MB 160-204941/1-A	Method Blank	98.8	89.0

Tracer/Carrier Legend
Ba = Ba Carrier
Y = Y Carrier

TestAmerica St. Louis